

For Reference

NOT TO BE TAKEN FROM THIS ROOM

For Reference

NOT TO BE TAKEN FROM THIS ROOM

Ex LIBRIS
UNIVERSITATIS
ALBERTAENSIS





Digitized by the Internet Archive
in 2019 with funding from
University of Alberta Libraries

<https://archive.org/details/Williams1964>

964
290
THE UNIVERSITY OF ALBERTA

PERSONAL SPACE AND ITS RELATION TO
EXTRAVERSION-INTROVERSION

by

John Llewelyn Williams

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY

EDMONTON, Alberta

DECEMBER, 1963

1964

UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled: "Personal Space and its Relation to Extraversion-Introversion", submitted by John Llewelyn Williams in partial fulfilment of the requirements for the degree of Master of Arts.

ABSTRACT

Personal space is a concept referring to the physical distances and positions people maintain when interacting among themselves. This is an exploratory study of the relationship between personality and personal space. The personality variable chosen was extraversion-introversion. The main hypothesis was that extraverts would prefer shorter interaction distances than would introverts.

Twenty introverts and 20 extraverts were selected from a population of 309 university students registered in an introductory psychology course. The basis of selection was according to extreme high or low scores obtained on the Extraversion scale of the Maudsley Personality Inventory.

The research was carried out in three phases:

(1) An experimental situation was arranged wherein the subjects were asked to enter a room and discuss a topic with someone already seated in the room. The distance the subject chose to maintain between himself and the decoy was taken as the raw data. A 2 x 2 x 2 analysis of variance was done, the variables being decoy, topic and personality. None of the results was significant.

(2) Phase Two consisted of a questionnaire designed to elicit subject's opinion of the distances and positions they would prefer when conversing or otherwise interacting with others. Very few of the questions showed significant differences between the personality groups. The results

of two of the questions suggested that extraverts allow people to get closer to them than do introverts. Significantly more often the extraverts reported that they preferred to dance cheek to cheek rather than at arm's length. Similarly, they indicated they would allow others to stand closer to them when conversing. When others do get too close, extraverts tend to externalize their feelings by being irritated with the offender while introverts internalize feelings by being self-conscious.

(3) The last phase was a method of limits procedure in which the subjects were instructed to stop the examiner at the maximum, optimum, and minimum distances for comfortable conversation. Observable differences in the expected direction were obtained in all three categories. However, only in the case of minimum allowable distance were these differences statistically significant.

ACKNOWLEDGEMENTS

I would especially like to thank Dr. R. Sommer and Dr. B. G. Rule for their helpful assistance and encouragement. Also much appreciated was the advice of Dr. E. Howarth, Dr. J. A. Easterbrook, and Mr. A. J. B. Hough.

TABLE OF CONTENTS

ABSTRACT	Page iii
ACKNOWLEDGEMENT	v
LIST OF TABLES	viii
LIST OF DIAGRAMS	ix
I. INTRODUCTION	
Personal Space	1
Extraversion-Introversion	7
This Study	8
II. PROCEDURE	
The Selection Instrument	10
Subjects	10
Phase One: An experimental situation	11
Phase Two: A questionnaire	13
Phase Three: A method of limits procedure .	16
III. RESULTS	
Phase One	19
Phase Two	20
Phase Three	24
Interphase Comparisons	25
IV. DISCUSSION	28
V. SUGGESTIONS FOR FURTHER RESEARCH	38
VI. CONCLUSIONS	40
REFERENCES	41

APPENDICES

"A" Maudsley Personality Inventory	44
"B" Distribution of Subject Scores on the Maudsley Personality Inventory	48
"C" Rating Scale of Subject's Behavior in Phase One	49
"D" Questionnaire used in Phase Two	50
"E" Distribution of Raw Data of Phase One	55
"F" Distribution of Transformed Data of Phase One	56

LIST OF TABLES

	Page
1. Summary of M.P.I. Data on Subjects	11
2. Summary of Analysis of Variance on Phase One	19
3. Minimum, Maximum, and Optimum Conversational Distances, Questionnaire Results	21 (a)
4. Minimum, Maximum, and Optimum Conversational Distances, Method of Limits Results	24
5. Intercorrelational Comparisons Among Phases One, Two, and Three	25
6. Mean Conversational Distances Obtained in Each Phase	26

LIST OF DIAGRAMS

	Page
1. Floor Plan of the Testing Room	12
2. Question Ten, Part (b)	14
3. The Method of Limits Procedure	16
4. The Conversational Arc	34

PERSONAL SPACE AND ITS RELATION TO
EXTRAVERSION-INTROVERSION

INTRODUCTION

Personal space is a new area in the field of social psychology. It is the aspect of ecology referring to the physical distances and positions people prefer in relation to others in their environment. This study is an initial attempt to discover whether personality differences lead to differences in the use of personal space. Extraversion-introversion was the personality variable chosen for investigation because of its clear involvement with subject-object relationships.

Psychologists may look at space in any of several different ways. For example, the psychophysicist can concern himself with visual distance perception (Woodworth & Schlosberg, 1960, pp. 455-491) and auditory localization in space (Woodworth & Schlosberg, 1960, pp. 349-361). On the other hand, the physiological psychologist may investigate an organism's methods of spatial orientation (Wendt, 1951). When we move from psychophysical and physiological to social psychology we find a comparative paucity of research. As Sommer writes, "Surprisingly little is known about the way people use space. Social scientists in the field have been concerned primarily with the distribution of such things as social classes, economic institutions, and mental illness. An almost unexplored area is microecology or the way that people in pairs or small groups arrange themselves." (Sommer, 1959, p. 247). Similarly, Hall says, " . . . we treat space somewhat as we treat

sex. It is there but we don't talk about it. And if we do, we certainly are not expected to get technical or serious about it." (Hall, 1959, p. 188). Also, Pepinsky writes, "The limits of physical space and their meaningfulness to man are constantly changing. Our challenge is to join with others in considering how man may yet accomplish his spatial conquests." (Pepinsky, 1958, p. 290).

There are at least two aspects to the social psychological view of space. The first is geographical territory which includes both the organism's home and the limits of travel into the world. This area has been extensively investigated in regard to animals (Von Uexkull, 1957; Hediger, 1955; Katz, 1943; and Hall, 1959).

The second aspect of social space is "personal space" which, unlike home and territory, is carried around with the organism. Some idea of the concept can be gained from such analagous terms as Von Uexkull's "soap-bubble world" (1957) or Stern's "aura" (1938). The "soap-bubble world", as defined by Von Uexkull, extends as far as an animal can perceive visually. This is the farthest plane which confines an animal's visual space and contains all that is visible to it. Both Stern and Katz used the term "personal space". The latter used space only in the sense of territory. The former, however, spoke of the person as being at the center of his world. External features are "personally near" when they maintain meaningful relations with the personal present; they surround one like an aura. The near region possesses immediate personal relevance, and is in awareness or available to awareness.

Two examples of pertinent animal studies are those by Davis (1958) and Sexton and Stalker (1961). Davis, working with house mice, found the incidence of aggressive behavior increased when animals were confined to a space one-tenth the size of their original environment. There was also a tendency for the animals to form social groups complete with a pecking order. This finding caused Davis to hypothesize that territorialism and social rank were two poles of a behavior continuum related to density. At low densities individuals are territorial but at high densities he found they may associate into groups which have a social rank. However, in some species the distance tolerance limit was so low that the individuals never associated together.

Sexton and Stalker, using fruit flies, progressively increased their number or density on a piece of wet filter paper. The finding was that within limits the mean distance between adjacent flies became more uniform as the population increased from low levels. The limitation of the number of flies and the occurrence of the uniform spacing pattern were attributed to avoidance reactions made by flies when within five millimeters of each other.

Hediger (1955) has found and measured an "escape distance" for a variety of animals. When an enemy oversteps a certain point the animal, in a typical manner, runs away from it, far enough to put at least its specific escape distance between itself and the enemy once again.

Edward Hall (1959), an anthropologist, describes the cultural variations in the physical distance people find comfortable for conversation. In South American countries conversation is held at a much shorter range than in North America. The Lebanese, conversely, like to be comparatively distant.

Foulkes and Anthony (1957) write that patients in group psychotherapy move their chairs back and forth according to occurrences in treatment. They also note that some patients become fidgety if crowded or if they feel there is not enough space between themselves and others. Winick and Holt (1961) feel it is of great importance for the comfort of patients in group therapy to have enough space between permanent chairs to enable a member to insert a folding chair and sit where he wishes.

During the course of treatment, Winick & Holt have found, the group tightens up by moving the chairs into a smaller circle. The group members will justify this by making remarks such as, "It's cold outside", "The light here is bad", and "This room looks empty" (Winick & Holt, 1961, p. 177). The presence of sofas presents a special problem. Many patients, preferring not to sit on them, seemingly do not want to be touched by other patients. The authors felt that the preference for individual chairs reflected the human being's need for an almost literal life space. Territoriality enters group psychotherapy in the case of patients who wish to have the same chair during each session.

Turning to systematic research with human subjects we have only five papers, (Sommer, 1959, 1961, 1962; Kaminski & Osterkamp, 1962;

and Steinzor, 1950). In his first paper on social space, Sommer (1959) dealt with research done in the natural setting of a cafeteria. Observations made during lunch hour revealed that people sitting close together talked with each other more frequently than did those at a distance or those who were separated by a person seated in between. Also, more conversations took place cornerwise than between people seated opposite or side by side. When pairs of both normal and non-schizophrenic patient subjects were asked to enter the cafeteria and discuss a topic, they also showed a preference for corner positions. Schizophrenics, in contrast, sat further away or would face away from their partners. In a third procedure, individuals were introduced into a situation where a person (termed a "decoy") was already seated at a table. Female subjects sat closer to female than male decoys. This was also closer than males sat to either male or female decoys. Sommer describes schizophrenics tested under this third procedure as having an impaired concept of social distance. Both male and female schizophrenics sat closer (side by side) to male decoys than in the case of normals.

A second paper of Sommer's (1961) outlined research using groups of three, four, five and six, with and without leaders. When asked to sit around tables the leaders generally took the end or head position and the rest of the group occupied chairs close to where the leader was sitting. When the leader took a side position, the others sat opposite, or cornerwise, but seldom beside him. Another

experiment reported in this paper showed that people preferred to sit opposite each other rather than side by side. From this experiment, it was judged that the distance limit for comfortable conversation under these conditions is five and one-half feet. Steinzor (1950) found in groups that the closer a person was to sitting opposite from another person, rather than by his side, the more likely he was to reply to a remark made by that person. He felt this occurred because people seated opposite are more readily seen and thereby have a greater physical and expressive stimulus value.

The most recent of Sommer's studies (1962) involved an expansion of the latter part of the 1961 paper. The data supported the previous findings that people prefer, in discussions, to sit opposite rather than side by side.

Kaminski and Osterkamp (1962) devised a paper and pencil test of spatial preferences and asked their subjects to verbalize their thoughts as they responded to it. The test required the subjects to mark their choice of seats in various situations including a lecture theatre, a parent meeting, and waiting room or park. The circumstances of entry varied from the rooms being unoccupied to there being only one seat left. Both the state of occupancy of the room and the mood of the individual were found to determine the path taken and ultimate seat choice. The verbal responses were grouped into categories which revealed certain characteristic methods of choosing seats. One method is called "areal indexing" and includes geometric, functional, and social reasons for seat selection.

A geometric reason would be to balance the distribution by choosing a seat opposite to where there is a cluster of people already seated. A social choice would be exemplified by the selection of a front row seat in order to appear ambitious.

One of the factors Kaminski and Osterkamp list is apropos to personal distance. This is "social-proximal space", a certain maximal distance from the other members which is never crossed. An example of the verbalizations grouped under this category is, "I'd like to be pretty close but not too close." (Kaminski & Osterkamp, 1962, p. 144).

Extraversion-Introversion

The extraversion-introversion continuum is identified with Carl Jung. However, as Jung (1923) himself points out, the prototype can be found in the writings of both predecessors and contemporaries, e.g., Jordan, Gross, and James. Eysenck utilized an experimental approach to extraversion-introversion. His placing extraversion together with intelligence, psychoticism and neuroticism as a major personality dimension was determined by factor analytic studies based on a variety of measurements. Lists of variables which have been found to discriminate between Extraverts and Introverts are given in an article in the Handbook of Abnormal Psychology (Eysenck, 1961, p. 10) and in Dynamics of Anxiety and Hysteria (Eysenck, 1957, p. 28).

Jung defines Extraversion as an outward turning of the libido. With this concept he denotes a manifest relatedness of subject to object in the sense of a positive movement of subjective interest towards the object. Introversion means a turning inwards of the

libido whereby a negative relation of subject to object is expressed. Interest does not move towards the object, but recedes towards the subject.

A major point which Eysenck (1947, p. 52) brings out is worth considering here. He notes there is a difference between what he terms the Jungian and the Freudian points of view on extraversion. Freud's point of view, a popular conception and one often used by questionnaire constructors, equates extraversion with sociability (Freud, 1920). For this reason, the introvert is considered an incipient neurotic as lack of sociability is considered a mark of neuroticism.

Eysenck (1947), following Jung, considers the major factor in extraversion to be the relation of person and object. He agrees with Freud, lack of sociability is a mark of neuroticism, but he does not consider it as basic to introversion. This is reinforced by his finding that the extraversion and neuroticism factors are orthogonal to one another. In later works (1957), however, he talks of two types of sociability. The neurotic may wish to socialize but is afraid whereas the introvert prefers not to socialize but is not afraid to do so if necessary.

This Study

The foregoing account of how, according to Eysenck, extraversion should not be equated with sociability may appear to weaken the rationale for investigating the relationship between personal space and extraversion-introversion. The following quotes from Jung, however, are presented as justification for this study.

Jung says the extrovert ". . . is distinguished by his striving towards the object . . . he strives to assimilate it." (Jung, 1923, p. 395); also he has, ". . . an outgoing candid, and accommodating nature that adapts easily to a given situation, quickly forms attachments, and, setting aside any possible misgivings, will often venture forth with careless confidence into unknown situations." (Jung, 1953, p. 43); and, ". . . an outward movement of interest toward the object . . . the object works like a magnet upon the tendencies of the subject." (Jung, 1923, p. 11). The introvert, ". . . repels every influence from the object." (Jung, 1923, p. 395); also, "The first attitude is normally characterized by a hesitant, reflective retiring nature that keeps itself to itself, shrinks from objects" (Jung, 1953, p. 43); and, "It is as though energy were flowing away from the object, ..." (Jung, 1923, p. 11).

The hypothesis, then, is that extraverts would prefer to be physically closer to people with whom they are interacting than would introverts. Two experimental situations and a questionnaire were used to test this hypothesis. The emphasis was placed on assessing conversational distance, but other types of interactional distance were investigated.

As well as adding to our knowledge of personal space, if the predicted relationship is shown to exist between the extraversion-introversion continuum and personal space, an important dimension will be added to extraversion-introversion theory.

PROCEDURE

The Selection Instrument

The Maudsley Personality Inventory (Eysenck, 1959b) was used as the basis for selection of the extraverted and introverted groups. This test was developed by Eysenck to measure two dimensions of personality: neuroticism and extraversion. Each of the dimensions is measured by means of 24 questions carefully selected after item analysis and factor analysis (Appendix A).

Subjects

Maudsley Personality Inventory scores were available for 309 university students registered in an introductory psychology course. From this population, 20 extraverts and 20 introverts were selected. All subjects were males between the ages of 18 and 25. The basis of selection was either a high or low score on the extraversion scale, together with a score at, or close to, the population mean on the neuroticism scale. The latter precaution was taken to prevent contamination from the neuroticism scale. Appendix B contains a scattergram illustrating the distribution of scores. With the E scale of the M.P.I., the highest possible score (indicating extraversion) is 48 and the lowest possible score (indicating introversion) is 0. Table One summarizes the M.P.I. data on the subjects.

TABLE 1

Summary of M.P.I. Data on Subjects

		E	I
	number	20	20
E scale	mean	38.90	15.90
	standard deviation	4.23	2.83
N _s scale	mean	25.20	23.75
	standard deviation	4.53	5.13

Three separate procedures were used to test the hypothesis that extraverts prefer shorter interaction distances than do introverts.

These were:

- 1) an experimental situation
- 2) a questionnaire
- 3) a method of limits procedure

Phase One: An experimental situation

This phase was carried out in a room approximately 24' x 11' x 12' high. The room was completely stripped of furniture except for one chair. This chair was for the use of the 'decoy', one of two male experimental assistants, who was already seated in the room before a subject made his entrance. Both decoys were registered first year master's students in the Department of Psychology at the University of Alberta.

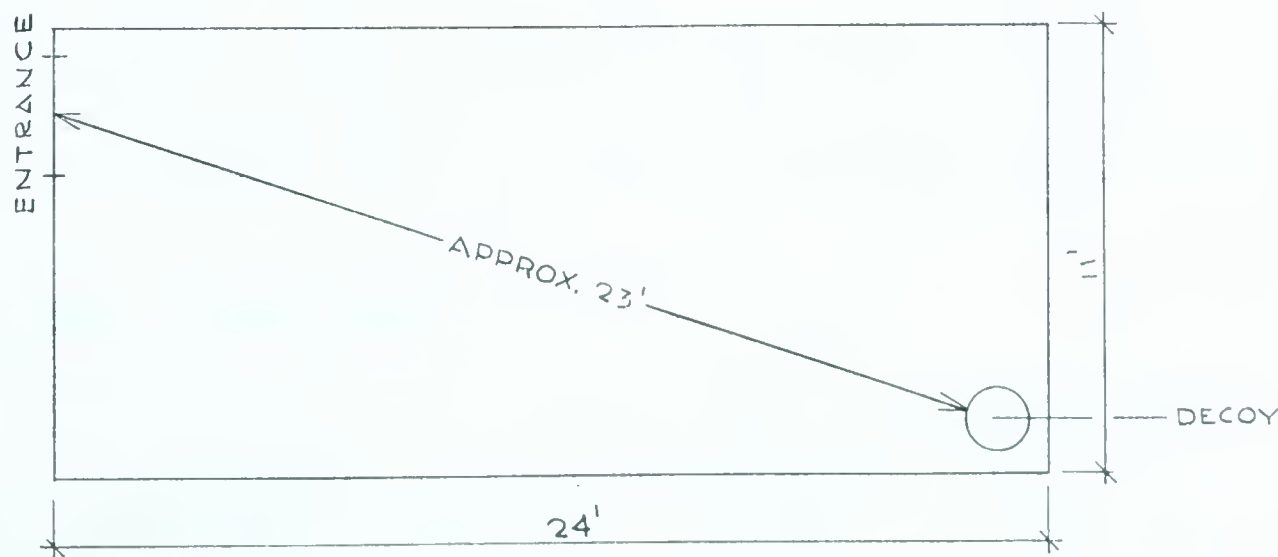
Each subject was met at the entrance to the room and given the following instructions:

I would like you to take this envelope. It contains a discussion topic. In this room there is someone already seated. When I open the door, take this chair with you, place it anywhere you wish, sit on it, and discuss the topic with the person already seated inside.

The decoys sat in the corner diagonally opposite to the door. This gave the subject a distance of approximately 23 feet within which to place his chair (Fig. 1). The chair was a fairly light-weight wooden one of standard type.

FIGURE 1

Floor Plan of the Testing Room



The discussion topics were:

I. Is Canada's military strength adequate?

II. Should Canada have compulsory military training?

The subject was ushered into the room and the door was closed behind him. As the door was closed, a stop watch was set in motion. At the end of three minutes the door was opened and the subject was asked to leave, the decoy taking care that the subject's chair was not disturbed when the subject left the room. A measurement was taken of the distance between chair centers. This measurement, an index of conversational distance, was the raw data of Phase One.

A 2 x 2 x 2 analysis of variance matrix contained the following variables: (1) Two subject groups, extraverts and introverts; (2) Two decoys, R and S; (3) Two discussion topics.

The final step in Phase One was an assessment of the subjects' behavior during the three minute interview by means of rating scales (Appendix C). These were filled out by the decoys at the completion of each session. The decoys had no previous knowledge of the M.P.I. scores of any of the subjects interviewed. In only one case had a subject met a decoy prior to the time of the experimental session.

Phase Two: A questionnaire

At the completion of the initial phase, the subjects were given a questionnaire (Appendix D). A number of the items were patterned after a questionnaire developed by Howarth (in press) to test social ascendancy in children. The items of the present

questionnaire can be grouped roughly into three categories:

1. Question 1

Designed to elicit the subjects' impressions of various aspects of Phase One.

2. Questions 2-12 inclusive

Contain various approaches to elicit the distance the subject prefers when interacting with others.

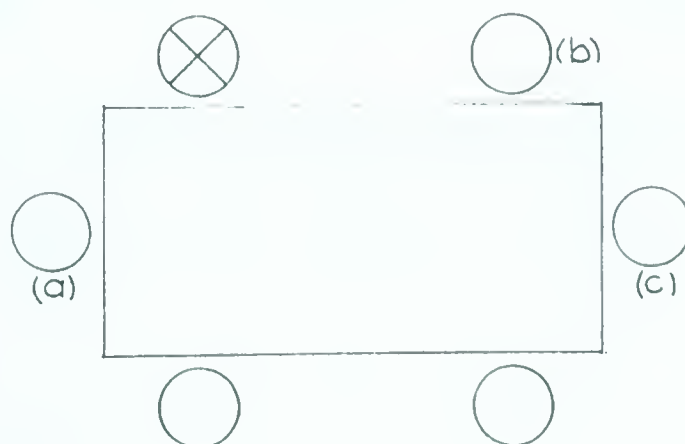
3. Questions 13-19 inclusive

These are more involved with positioning than with distance. That is, a variety of situations are described or diagrammed calling upon the subject to indicate where he would usually place himself in relation to other members of a group.

A few questions actually tapped both distance and positional variables. An example of this is Question Ten. One of the diagrams from this question is depicted here (Fig. 2).

Figure 2

Question Ten, Part (b)



In this question the subject was asked to put an X indicating where he would sit in relation to the "X" already on the diagram. This latter "X" indicated another person already seated at the table. Seat (c) is clearly further away from the "X" than either of seats (a) or (b), so a choice of (c) would indicate preference for a relatively distant seat from the person already at the table. On the other hand, (a) and (b) are both about the same distance from "X", so a choice of one of these over the other would show a positional preference. For example, a choice of seat (a) would mean a preference for a corner position rather than a side by side seating relationship.

Two items given in the original questionnaire are omitted because they do not appear to be relevant to personal space. These questions were:

Would you rather be on the stage or part
of the audience? Circle one.

(On Stage) (Part of the audience)

In hockey which position would you most like
to play?

(Goal) (Defence) (Forward)

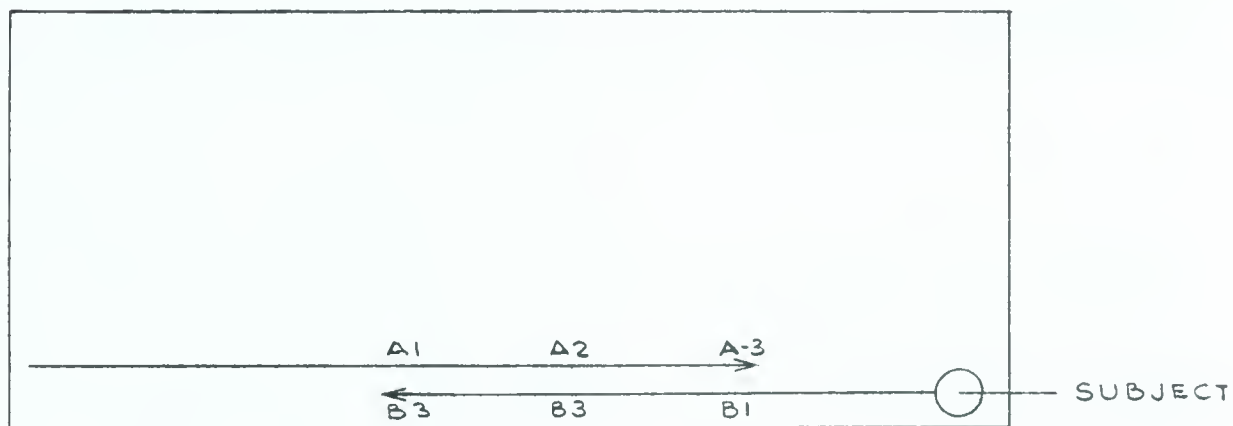
The data were analyzed by either Chi square or t-tests.
Details will be given in the 'Results' section.

Phase Three: A method of limits procedure

After completing the questionnaire, each subject was asked to return to the room where Phase One was held. He was directed to the end of the room and asked to stand with his back against the wall (Fig. 3).

Figure 3

The Method of Limits Procedure



The experimenter instructed each subject as follows:

I am going to the opposite end of the room and then slowly walk towards you. I would like you to stop me three times, once when I first become close enough for comfortable conversation (A1), then when I reach the optimum point for comfortable conversation (A2), and finally when I first become too close for comfortable conversation (A3).

After a short pause the instructions were continued:

After that, I am going to start at close range and slowly back away from you. Once again I would like you to stop me three times. First when I become just far enough away for comfortable conversation (B1), secondly when I reach the optimum distance for conversation (B2), and lastly when I first become too far away for comfortable conversation (B3).

If necessary, these instructions were repeated or explained until it appeared that the subject understood what was wanted. After the initial three measurements the second set of instructions was repeated in summary.

The six points where the examiner was stopped were marked by means of a piece of chalk inserted in dowelling held in the examiner's right hand. In this manner marks could be made from a standing position at a point directly below appropriate eye position.

The points were grouped as follows:

A1 "first become close enough" - with B3 "first become too far".
 A2 "optimum" - with B2 "optimum".
 A3 "first become too close" - with B1 "just far enough away".

The distance between the members of each pair was measured and the half way point marked:

$\frac{A1 + B3}{2}$ became the 'maximum' distance for comfortable conversation.

$\frac{A2 + B2}{2}$ became the 'optimum' distance for conversation.

$\frac{A3 + B1}{2}$ became the 'maximum' distance comfortable for conversation.

A measurement was made between each of the resultant three points, maximum, optimum and minimum and a point eight inches in front of the wall where the subject stood. The latter point was used because it was felt to be a good approximation of how far out from the wall the subjects' eyes were. Each measurement, then, was intended as an estimate of eye to eye distance.

The extraverts and introverts were compared on each of the three measurements by means of t tests.

RESULTS

Phase One

In this phase the raw data were the measured distance between the chairs of the decoy and the subject. A marked skewness in the distribution of the raw data (Appendix E) was normalized by a logarithmic transformation. From inspection, the resultant data (Appendix F) were considered suitable for the analysis of variance. The 2 x 2 x 2 factorial design included two subject groups (extraverts and introverts), two decoys and two discussion topics. A summary of the results is presented in Table 2.

TABLE 2

Summary of the Analysis of Variance on Phase One

Source of Variation		Sum of Square	D.F.	Mean Square	F
A	Personality (E-I)	.0009	1	.0009	
B	Decoy	.0925	1	.0925	2.52
C	Topic	.0087	1	.0087	
A x B	Personality x Decoy	.0381	1	.0381	1.04
A x C	Personality x Topic	.0995	1	.0995	2.72
B x C	Decoy x Topic	.0156	1	.0156	
A x B x C		.0359	1	.0359	
Error	Within Treatments	1.1724	32	.0366	

None of these results is significant.¹ On this basis it can be said that the three variables, personality, decoy, and topic and their interactions do not affect the conversation distance as tested in Phase One. The hypothesis that extraverts will prefer closer interaction distance is not substantiated.

The subjects' behavior during the interview as rated by the decoys was analyzed by means of median tests. No significant differences were found between extraverts and introverts on any of the rating scales.

Phase Two

For presentation here, the items in the questionnaire are grouped according to the categories given in the procedure. The second category is further subdivided by placing similar questions together.

1. Question One - the subject's view of factors in Phase One.

The factors were as follows:

- (a) strangeness of the situation

¹ $P < .05$ was selected as the significance level for this experiment.

With the number of statistical tests carried out during the course of this investigation, there is a probability of at least one result reaching this level by chance. However, as this is an exploratory study, it is perhaps best to be overinclusive rather than underinclusive lest a promising finding is overlooked and not followed up in the future.

- (b) the topic discussed
- (c) not previously knowing the person to whom you talked
- (d) freedom to place your chair wherever you wished
- (e) the contribution of the other person
- (f) time spent in the situation

In a Chi square analysis, only part "c" of Question One (not previously knowing the person to whom you talked) showed a significant difference between extraverts and introverts ($p < .05$). The extraverts enjoyed conversing with a stranger more than did the introverts.

2. Personal Space

- A. Questions Two and Ten. These two questions both involve the subject's choice of seats at a table where there is someone already seated. No significant difference was found between extraverts and introverts on either question.
- B. Questions Three, Four, and Five ask the subject to choose respectively the minimum, maximum, and preferred distances for comfortable conversation. The results are presented in Table 3.

A t test was used to determine the significance of differences between means. Differences in the variances were found significant in F tests, so t was evaluated in terms of the tabled value for one half the number of d.f. that would be used if the variances were homogeneous (Edwards 1960, p. 108).

The only significant difference ($p < .025$) found was in the minimum distance comfortable for conversation. This difference was in the predicted direction.

TABLE 3

Minimum, Maximum, and Optimum Conversational Distances:

Questionnaire Results

Question	E Mean (Inches)	E S ²	I Mean (Inches)	I S ²	<u>t</u>	<u>p</u> *
3 - Minimum	24.2	94.0	35.1	378.9	2.18	.025
4 - Maximum	105.5	5787.6	91.8	2019.9	.68	N.S.
5 - Optimum	47.8	633.6	48.9	309.3	-	N.S.

*All tests are one tailed.

C. Question Six asked subjects whether they preferred dancing at arm's length or cheek to cheek, a question clearly relevant to personal space. Once again Chi square was used. The results were significantly different and in the expected direction ($p < .02$). Dancing cheek to cheek was preferred by 85 percent of the extraverts as compared to 50 percent of the introverts.

D. Questions Seven, Eight, and Nine tap the subjects' reaction when personal space is violated. Chi squares were calculated on each of these questions.

No significant difference between extraverts and introverts was found on Question Seven (Does it bother you when people you don't know sit next to you on a bus?).

On Questions Eight and Nine the subjects were asked to indicate the feelings they have when persons stand either too near or too distant. A list of feeling states was given that included; "don't mind", "uncomfortable", "self-conscious", "irritated", and "strained", of which the subject could circle one or more. On Question Eight there was a significant difference ($p < .05$) between the extraverts and introverts. Inspection of the data reveals the difference is mainly due to the introverts choosing, "self-conscious" more frequently than did the extraverts and the latter in turn choosing "irritated" with greater frequency than did the introverts. This suggests internalization of feeling by the introverts and externalization of feeling by the extraverts. Question Nine, while not showing significant differences, suggests a trend similar to Question Ten. There was a slight rise in the number of introverts who chose "irritated" on Question Nine rather than Eight. The introvert may feel more free to be irritated when others are farther away.

- E. Questions Eleven and Twelve both involve population density. Inspection reveals little difference between extraverts and introverts in either the beach or party situations. What little difference there is, is in the expected direction; extraverts are more likely to locate themselves where population density is greater.

3. Positioning in Relation to Others.

The majority of these questions did not discriminate between extravert and introvert. The following questions show virtually no difference between the two groups:

No. 14. Seating preference at the Jubilee Auditorium.

Most choices by both personality types were for middle seats.

No. 15. Position in a three level pyramid tumbling act.

No. 16. Table preference in a restaurant - tables around the walls were preferred by extraverts as frequently as by introverts.

No. 17. Position in a group of motorcyclists on an excursion.

No. 18. Position in a marching troupe.

Two questions, Nos. 13 and 19, were analyzed by means of Chi square tests. Question 13, seating preferences in a classroom, required a correction for continuity. On this item, no significant difference was found between introverts and extraverts. There was, however, a tendency for the introverts to prefer the middle as compared to the extraverts. The extraverts had a tendency to like the back of a classroom more than did the introverts. Question 19 was a comparison between preference for outside and center positions in a group of three walking side by side. A difference close to significance was found, with the extraverts preferring the center position more than did the introverts.

Phase Three

In this phase, the subjects were asked to estimate minimum, optimum, and maximum distances for comfortable conversation. The mean of the measurements in inches, between subject and examiner for each distance was taken as the raw data. The means and results of analysis are given in Table 4.

TABLE 4

The Method of Limits Procedure:

Minimum, Optimum, and Maximum Distances for Comfortable Conversation

	E Mean (inches)	E S ²	I Mean (inches)	I S ²	<u>t</u>	<u>p</u> *
Minimum	24.2	47.3	28.0	44.0	1.72	.05
Optimum	49.3	205.1	56.7	196.9	1.61	.10
Maximum	98.2	975.5	111.6	816.8	1.38	.10

*All tests are one tailed

Only the minimum distance allowable for comfortable conversation showed a significant difference between the two groups ($p < .05$). The optimum distance, however, is very close to being significantly different between the two groups. The maximum also, while not significant, is in the expected direction. It should be noted here that the maximum distance did not show the same trend as in the questionnaire (Q. 4) where the extravert mean on the maximum distance was larger than that of the introvert.

Interphase Comparisons

It was deemed appropriate to compare the results of the method of limits procedure and items 3, 4, and 5 of the questionnaire. These three questions ask respectively for the subjects' estimation on paper of the minimum, maximum, and optimum distances for comfortable conversation. This is the same information as was sought in Phase Three, the method of limits procedure. The comparison was carried out by means of a rank-serial correlation. Also carried out were correlations between each of these six measurements and the data of Phase One. Table 5 presents these intercorrelations.

TABLE 5

Comparisons Among Phases One, Two, and Three

	Method of Limits Procedure			
	Phase 1	Minimum	Optimum	Maximum
Phase 1		.17	.35*	.20
Question #3 Minimum	.08	.50**		
Question #5 Optimum	.22		.55**	
Question #4 Maximum	.23			.61**

* $p < .05$

** $p < .01$

All correlations between questionnaire and method of limits data are significant. Only one correlation was found significant in the comparison of Phase One with both questionnaire and method of limits results. This was with the optimum distance preferred as found on the method of limits procedure.

Measurements of conversational distance were made using three different methods in this study. It may be of advantage to group together the means of all these measures for visual inspection (Table 6).

TABLE 6

Mean Conversational Distances Obtained
in Each Phase

Phase 1			Phase 2 (Questions 3,4,5)			Phase 3			
E	I	$\frac{E + I}{2}$	E	I	$\frac{E + I}{2}$	E	I	$\frac{E + I}{2}$	
			Minimum	24.2	35.1	29.7	24.2	28.0	26.1
81.6	76.7	79.2	Optimum	47.8	48.9	48.4	49.3	56.7	53.0
			Maximum	105.5	91.8	98.7	98.2	111.6	104.9

The mean values of Phase Two and Phase Three are very similar in each of the comparative categories. The mean of 79.2 inches found in Phase One does not correspond to any of the other mean values, being approximately half way between the optimum and maximum values of Phases Two and Three. These findings, together with those

reported in Table 5 suggest a closer relation between Phase Two (Questions 3, 4, & 5) and Phase Three than either of these have with Phase One.

DISCUSSION

In this study several approaches have been used to investigate the hypothesis that extraverts would prefer to be closer to others when engaged in social interaction than would introverts. While the overall trend is in the direction predicted by the hypothesis, only in the case of close range interaction are the results statistically significant. The clearest differences were seen in the dancing and conversational items, the extraverts allowing people to get closer to them. We have, then, evidence for saying that personality traits Jung considered a part of the extraverted and introverted characters are to some degree reflected in the distances preferred in interpersonal relations.

Phase One was an experimental situation in which each subject was asked to take a chair into a room, sit on it, and discuss a topic with a 'decoy'. None of the three variables; topic, decoy, or extraversion-introversion; significantly affected the physical distance between subject and decoy. The topic and decoy changes were not expected to affect the results, but if the hypothesis is valid there should have been a significant difference between the extravert and introvert groups.

Question One of the questionnaire administered as Phase Two of this study asked the subjects to evaluate various aspects of the interaction involved in Phase One. The only part of Question One on which there was a significant difference between the groups was, "Not previously knowing the person to whom you talked". This is the one item which referred directly to the

subject's feeling about the other person in the situation, the decoy. The introverts more frequently indicated this produced strain during the situation rather than making it enjoyable. The direction of the difference ties in well with Jung describing the introvert as a person hesitant in forming attachments.

Two techniques were used to elicit the subject's views on what they considered the minimum, optimum and maximum distances for comfortable conversation. The first was in the form of questions on the questionnaire; the second was the method of limits procedure employed in Phase Three. The estimation in each case which showed the predicted difference at a significant level was the minimum allowable distance. The optimum and maximum distances of the method of limits procedure were in the expected direction, though not significant. These same estimations on the questionnaire did not show the anticipated difference between extraverts and introverts. Indeed, the maximum distance was in the opposite direction from that predicted. Perhaps more credence can be given to estimations made on the method of limits procedure than to those of the questionnaire because the former are more similar to a life situation. Overall, then, the extraverts tend to prefer to be nearer to others with whom they are conversing than do the introverts. However, the only statement stemming from the results of the conversational distance items that can be made with

relative certainty is that extraverts will allow people to get closer to them than will introverts.

A surprisingly high correspondence was seen in the mean values obtained in the two methods used to elicit subject's judgements of the minimum, optimum, and maximum conversational distances. That is, each mean value obtained on the method of limits procedure was close to its equivalent category on the questionnaire. Also, intercorrelations among these six measurements were high in all cases.

The data of Phase One, the experimental situation, showed a significant correlation with only one of the six maximum, minimum, and optimum conversational distances on the questionnaire and method of limits procedure. Comparing the overall mean of the distance between chairs in the first phase with the means of the various estimates of comfortable conversational distance, we find it lies roughly half way between the optimum and maximum measures. One might expect that it would have been closer to the optimum distance. It appears that differing circumstances may produce differing interaction distances. Three of the circumstances that may have contributed to the differences found here are as follows:

- (1) The experimental situation involved interaction between two people seated, whereas a standing position was used or implied in the latter two phases.

- (2) The subject's attention was brought to bear on estimating conversational distance in Questions 3, 4, and 5, and the method of limits procedure whereas in Phase One, no specific mention was made that the subject should seat himself a comfortable distance from the decoy. When the subjects are made more aware of what is wanted, they may follow more closely to their own generalized expectations.
- (3) A most interesting idea of why the difference occurred comes from Eysenck's thought, ". . . the trait sociability does not lie on either axis [neuroticism and extraversion] but has projections on both." (Eysenck, 1957, p. 179). In Phase One the subjects had just entered a rather new and artificial situation which might have tapped sociability as related to neuroticism. If this were the case, the greater distance shown on Phase One as compared to the optimal distance found in the other two phases, would be due to the operation of the neuroticism dimension. There being no difference between extraverted and introverted groups would be explained by the homogeneity of subject's scores on the neuroticism scale. By the time

of Phases Two and Three, some adaptation would have taken place which would lower anxiety thereby allowing the extraversion factor more dominance.

One of the more natural parts of the questionnaire is the item which asked the subjects whether they preferred dancing cheek to cheek or at arm's length. This item shows a significant difference between the two groups in the expected direction. Natural circumstances and questions may better reveal the effect of extraversion-introversion on distances preferred in interaction between people - a factor worth bearing in mind in future research on the topic. It should be noted that it would appear this question bears a close relation to the minimum estimations of comfortable interaction distances asked for on the questionnaire and in the method of limits procedure. These also showed the extravert allowing people to get closer than did the introverts.

The questionnaire diagrams of table situations revealed no difference between the extraverts and the introverts in regard to choice of seat location in relation to persons already seated. Similarly, the other two items of the questionnaire that involve the subjects indicating a position preference on a diagram, the beach and party situations did not show a significant difference between extraverts and introverts in respect to location choice among varying population densities. If there are differences to be found between the two personality types, diagrams such

as the table, beach, and party situations do not appear to reveal them.

A further analysis was done on the table situations in order to determine how the results on a paper and pencil test compared with the observations and experiments carried out by Sommer (1959, 1961). For this purpose the extravert and introvert choices were added together. On Question Two, the square table (Appendix D, p. 50), the two locations cornerwise to the "X", or person already seated, were taken as one position in order to have a straight comparison between corner to corner and opposite chairs.

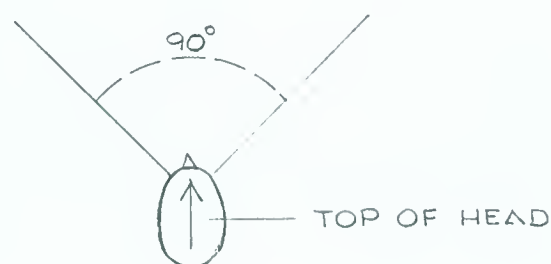
Question Ten, depicted two rectangular tables each with six chairs (Appendix D, p. 52). In the first diagram where the "X" was at the head of the table, the side chairs were similarly grouped. The two side locations close to the "X" were taken together as were the two distant from the "X". All locations in the second diagram of Question Ten were treated individually. Chi square tests were carried out to determine the significance of the data. On the square table no significant difference was found between cornerwise and opposite choices. These results differ from those reported by Sommer (1959) who found that people preferred the cornerwise location. On the rectangular tables the results on both diagrams are significant ($p < .001$) and fairly consistent with the findings of Sommer (1959, 1961). Where the person already seated was at the head of the table, there is a clear preference for the corner-

wise seats closest to him. When "X" was at the side, the subject chose to be close, but not too close. As Sommer found, the side by side position is infrequently chosen. However the findings differ from those of Sommer in subjects indicating a clear preference for the opposite over the cornerwise position.

The preference for cornerwise and opposite locations may be explained by hypothesizing a 'conversational arc' or 'sector'. Interaction between people who are talking usually takes place face to face. On the horizontal plane the 'conversational sector' might be considered as what is within the visual space that can be seen by both eyes at once; an arc which for most people is approximately 90 degrees. It may be diagrammed as follows:

Figure 4

The Conversational Arc



If this 'conversational sector' is accepted as the arc within which most people like to keep those to whom they are talking then the preference for corner to corner or opposite

positions would be due to the strain on the neck in keeping a person who is seated on the same side of a table within this 'conversational sector'. Also under the side by side conditions there is nothing between the two persons to maintain the minimum limit permissible for comfortable conversation.

One significant difference between the extraverts and introverts was found among the three questionnaire items designed to elicit subjective feeling states with regard to personal space. The introverts said they would feel self-conscious when others were too close while extraverts indicated "irritated" would better describe their feelings. This is a clear indication of the extravert looking to an external factor as the source of discomfort, while the introvert looks at himself. This supports Jung's belief that the former is object centered and the latter, self-centered. It would appear the area of emotional reaction to violations of personal space bears further investigation by verbal report, and physiological measurement as well as by questionnaire.

The remaining questionnaire items concern positioning in relation to groups of other people. Generally this involves a decision between the center as against the periphery of a group. These questions, not really relevant to the main hypothesis, were put in as a matter of interest. None of these items produced a significant difference between extraverts and introverts.

With the variation in the significance of the findings of this study, it appears as though personal space is affected by the extraversion factor only in some areas. Two reasons are presented here to explain why more of the findings were not in the expected direction. Firstly, this being an initial study in the area, some of the procedures and questions may not have been properly framed to elicit differences that are actually there. Secondly, the selection of the subject groups may have been at fault. For comments on the selection procedure used for choosing the two groups, we can turn to Eysenck:

Ideally one would correlate a given test which is theoretically related to extraversion-introversion with a factor score on extraversion-introversion derived from a whole battery of well established tests including questionnaires, ratings, objective, projective, and automatic measures. By choosing only a questionnaire or a psychiatric rating, as one's criterion, one immediately lessens by more than 50 percent, the probability of finding a significant relationship - both ratings and questionnaires having loadings on the extraversion-introversion factor of only between .5 and .6 (1959, p. 266).

Research in the area of personal space will have wide application in group planning. If characteristic patterns of using space are discovered that relate to personality or mood, an important behavioral parameter will be added to assist in the evaluation of people as they conduct themselves in group situations. An example of the use of space with animals is given by Hediger (1955) who reports being able to discriminate among different species of animals which have very similar external appearances by their characteristic escape or flight reactions when they are approached. Without clearcut results, it is difficult to speak of the implications of the present investigation for practical uses, other than we have evidence that personal space differs among individuals. These differences appear to be related to other aspects of personality.

SUGGESTIONS FOR FURTHER RESEARCH

Personal space is an open area for research. There is a need for investigation into such variables as age, sex, culture, etc., as well as personality differences. There is a definite requirement for techniques suitable for the investigation of personal space. This study, as rough as it is, opens up several channels for future research.

Two research possibilities that may prove interesting are:

- 1) Jung when outlining the characteristics of extraverts and introverts says that with familiarity ". . . the types invert themselves . . . the introvert now fascinated with the object . . . shyness vanishes, the object [takes] possession of him and he [yields] himself willingly. The extravert however, [feels] a growing resistance to the object The introvert [becomes] extraverted, the extravert, introverted." (1953, p. 56).

Spatially, this may be shown in the introvert moving towards people as he becomes more familiar with them. For the extravert personal space instead of shrinking may increase with time.

- 2) Eysenck believes there are two types of sociability - one a part of the extraversion dimension, the other a part of neuroticism. That is, both the introvert and the neurotic show aversion to social interaction, but for different reasons. Would, for example, there be a greater difference in conversational distance between the extremes of neuroticism than that found between the extraversion-introversion extremes?

CONCLUSIONS

1. In the experimental situation of the present study extraverts did not seat themselves closer to another person (decoy) than did introverts. Variations in topics discussed and decoys used also did not affect seating distance.
2. Introverts were more likely to report feeling uncomfortable when meeting a stranger than are extraverts.
3. Extraverts allowed other people to get closer to them when conversing than do introverts. However, no clear difference was shown in either the preferred distance for conversation or the maximum allowable conversational distance. More extraverts than introverts reported preferring a cheek to cheek position rather than an arm's length relation when dancing.
4. When personal space is violated, especially in the case of other people getting too close, extraverts said they are more likely to externalize their feelings by being irritated, while introverts said they internalize by feeling self-conscious.
5. Extraverts and introverts did not differ in choosing among relative areas of lesser or greater densities of people at either party or beach situations. Both groups, however, reported preferring to be in comparatively denser locales at a party than at a beach.
6. No differences between extraverts and introverts were shown in a variety of situations in positioning or choice of where to locate themselves, in relation to one or more other people.

REFERENCES

- Davis, D. E. The role of density in aggressive behavior of house mice. Animal Behavior, 1958, 6, 207-210.
- Edwards, A. L. Experimental Design in Psychological Research (2nd. ed.) New York: Rinehart, 1960.
- Eysenck, H. J. Dimensions of Personality. London: Routledge & Kegan Paul, 1947.
- Eysenck, H. J. Dynamics of Anxiety and Hysteria. London: Routledge & Kegan Paul, 1957.
- Eysenck, H. J. Structure of Human Personality (2nd. ed.). London: Methuen, 1959a.
- Eysenck, H. J. Manual of the Maudsley Personality Inventory. London: University of London Press Ltd., 1959b.
- Eysenck, H. J. Classification and the problem of diagnosis. In H. J. Eysenck (Ed.), Handbook of Abnormal Psychology. New York: Basic Books, 1961.
- Foulkes, S. H. & Anthony, E. J. Group Psychotherapy: The Psychoanalytic Approach. London: Penguin, 1957.
- Freud, S. General Introduction to Psychoanalysis. New York: Liverwright, 1920.
- Hall, E. T. The Silent Language. Garden City: Doubleday, 1959.
- Hediger, H. Studies of the Psychology and Behavior of Animals in Zoos and Circuses. New York: Criterion, 1955.

- Howarth, E. Verification of objective personality factors in the middle childhood range. J. genet. Psychol. In press.
- Jung, C. G. Psychological Types. New York: Harcourt, Brace, 1923.
- Jung, C. G. Two Essays on Analytical Psychology. New York: Pantheon Press, 1953.
- Kaminski, G. & Osterkamp, U. Untersuchungen über die topologie sozialer handlungsfelder (Investigations in the topology of social space). Zeitschrift für Experimentelle und Angewandte Psychologie, 1962, IX, 3, 417-451.
- Katz, D. Animals and Men. London: Penguin, 1953.
- Pepinsky, H. B. The conquest of space. Amer. Psychologist, 1958, 13, 235-241.
- Sexton, O. J. & Stalker, H. D. Spacing patterns of female *drosophila paramelanica*. Animal Behavior, 1961, 9, 77-81.
- Sommer, R. Studies in personal space. Sociometry, 1959, 22, 247-260.
- Sommer, R. Leadership and group geography. Sociometry, 1961, 24, 99-110.
- Sommer, R. The distance for comfortable conversation: a further study. Sociometry, 1962, 25, 111-116.
- Steinzor, B. The spatial factor in face-to-face discussion groups. J. abnorm. soc. Psychol., 1950, 45, 552-555.
- Stern, W. General Psychology. New York: Macmillan, 1930.

- Von Uexkull, J. A stroll through the worlds of animals and men. In Claire Schiller (Ed.), Instinctive Behavior. New York: International Universities Press, 1957.
- Wendt, G. R. Vestibular functions. In S. S. Stevens (Ed.), Handbook of Experimental Psychology. New York: Wiley, 1951.
- Winick, C. & Holt, H. Seating position as non verbal communication in group analysis. Psychiatry, 1961, 24, 171-182.
- Woodworth, R. S. & Schlosberg, H. Experimental Psychology (rev. ed.). New York: Henry Holt & Co.

APPENDIX A

MAUDSLEY PERSONALITY INVENTORY

NAME _____ CHRISTIAN NAMES _____

AGE _____ SEX _____ OCCUPATION _____

N =

E =

? =

Instructions:

Here are some questions regarding the way you behave, feel and act. After each question there is a "Yes", a "?", and a "No".

Try and decide whether "yes" or "no" represents your usual way of acting or feeling; then put a circle round the "Yes" or "No". If you find it impossible to decide, put a circle around the "?", but do not use this answer except very occasionally. Work quickly, and don't spend much time over any questions; we want your first reaction, not a long drawn-out thought process! The whole questionnaire shouldn't take more than a few minutes. Be sure not to omit any questions. Now go ahead, work quickly, and remember to answer every question. There are no right or wrong answers, and this isn't a test of intelligence or ability, but simply a measure of the way you behave.

1. Are you happiest when you get involved in some project that calls for rapid action? Yes ? No
2. Do you sometimes feel happy, sometimes depressed, without any apparent reason? Yes ? No
3. Does your mind often wander while you are trying to concentrate? Yes ? No
4. Do you usually take the initiative in making new friends? Yes ? No
5. Are you inclined to be quick and sure in your actions? Yes ? No
6. Are you frequently "lost in thought" even when supposed to be taking part in a conversation? ... Yes ? No

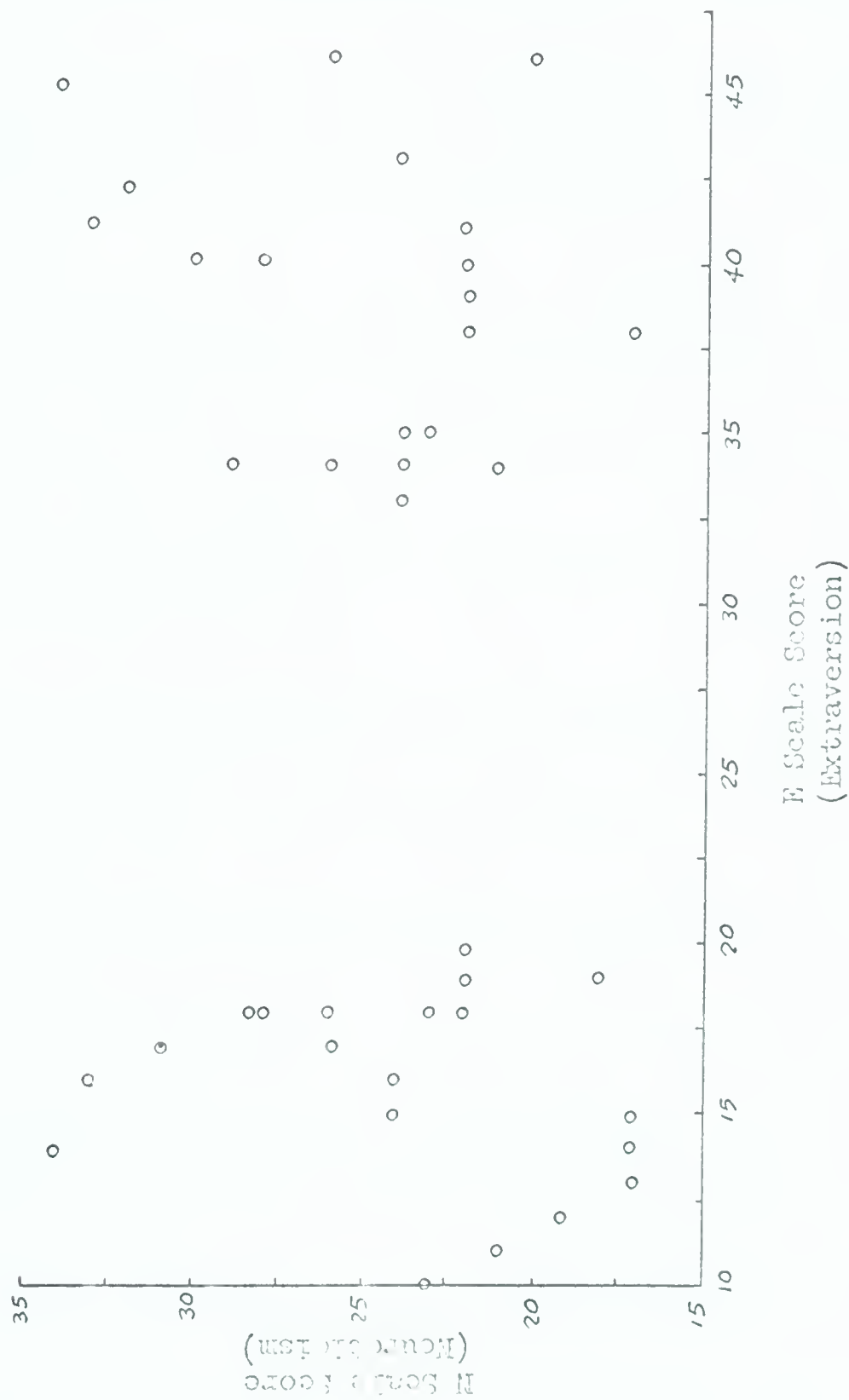
7. Are you sometimes bubbling over with energy
and sometimes very sluggish? Yes ? No
8. Would you rate yourself as a lively individual? .. Yes ? No
9. Would you be very unhappy if you were prevented
from making numerous social contacts? Yes ? No
10. Are you inclined to be moody? Yes ? No
11. Do you have frequent ups and downs in mood,
either with or without apparent cause? Yes ? No
12. Do you prefer action to planning for action? Yes ? No
13. Are your daydreams frequently about things
that never come true? Yes ? No
14. Are you inclined to keep in the background on
social occasions? Yes ? No
15. Are you inclined to ponder over your past? Yes ? No
16. Is it difficult to "lose yourself" even at a
lively party? Yes ? No
17. Do you ever feel "just miserable" for no good
reason at all? Yes ? No
18. Are you inclined to be overconscientious? Yes ? No
19. Do you often find that you have made up your
mind too late? Yes ? No
20. Do you like to mix socially with people? Yes ? No
21. Have you often lost sleep over your worries? Yes ? No
22. Are you inclined to limit your acquaintances
to a select few? Yes ? No
23. Are you often troubled about feelings of
guilt? Yes ? No
24. Do you ever take your work as if it were a
matter of life or death? Yes ? No

25. Are your feelings rather easily hurt? Yes ? No
26. Do you like to have many social engagements? Yes ? No
27. Would you rate yourself as a tense or
"highly-strung" individual? Yes ? No
28. Do you generally prefer to take the lead in
group activities? Yes ? No
29. Do you often experience periods of loneliness? .. Yes ? No
30. Are you inclined to be shy in the presence of
the opposite sex? Yes ? No
31. Do you like to indulge in reverie
(daydreaming)? Yes ? No
32. Do you nearly always have a "ready answer" for
remarks directed at you? Yes ? No
33. Do you spend much time in thinking over good
times you have had in the past? Yes ? No
34. Would you rate yourself as a happy-go-lucky
individual? Yes ? No
35. Have you often felt listless and tired for no
good reason? Yes ? No
36. Are you inclined to keep quiet when out in a
social group? Yes ? No
37. After a critical moment is over, do you usually
think of something you should have done but
failed to do? Yes ? No
38. Can you usually let yourself go and have a
hilariously good time at a gay party? Yes ? No
39. Do ideas run through your head so that you
cannot sleep? Yes ? No
40. Do you like work that requires considerable
attention? Yes ? No
41. Have you ever been bothered by having a useless
thought come into your mind repeatedly? Yes ? No

42. Are you inclined to take your work casually,
that is as a matter of course? Yes ? No
43. Are you touchy on various subjects? Yes ? No
44. Do other people regard you as a lively
individual? Yes ? No
45. Do you often feel disgruntled? Yes ? No
46. Would you rate yourself as a talkative
individual? Yes ? No
47. Do you have periods of such great restlessness
that you cannot sit long in a chair? Yes ? No
48. Do you like to play pranks upon others? Yes ? No

APPENDIX B

Distribution of Subject Scores on Maudsley Personality Inventory



APPENDIX C

Decoy Rating Scale of Subject's Behavior in Phase One

Responsiveness  Reticence

Movement +  -

Friendliness +  -

Forwardness +  -

Level
of Relaxation +  -

Voice Volume +  -

Gesticulation +  -

Eye Contact +  -



APPENDIX D

QUESTIONNAIRE

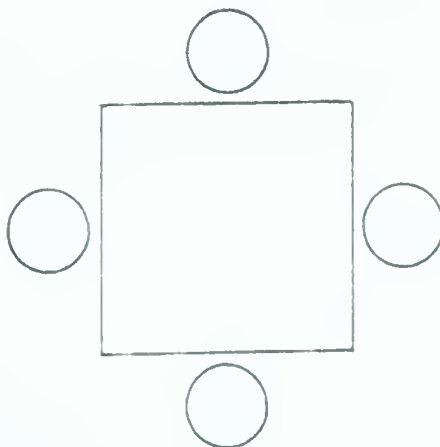
NAME _____ DATE _____

1. Many factors were probably operating in the situation you were just in which influenced your comfort. Below is a list of some of these factors. We would like you to rate each factor according to how you feel it affected the situation. Circle one as follows:

- (1) if you feel it made the situation more enjoyable.
- (2) if you feel it had little or no effect during the situation.
- (3) if you feel it produced strain during the situation.

- (a) strangeness of the situation (1) (2) (3)
- (b) the topic discussed (1) (2) (3)
- (c) not previously knowing the person you were talking to (1) (2) (3)
- (d) freedom to place your chair wherever you wished (1) (2) (3)
- (e) the contribution of the other person (1) (2) (3)
- (f) time spent in the situation (1) (2) (3)

2. The following diagram represents a table with four chairs around it. Someone is already seated at X. Put another X to indicate where you would generally sit.



3. If you were standing in a room talking to someone, how close would you have to be before you felt uncomfortable? (Please indicate the units your answer is in).

-
4. What is the maximum distance you would find comfortable for conversation with another person? (Please indicate the units your answer is in).

-
5. Estimate the distance you would prefer for comfortable conversation with another person. (Please indicate the units your answer is in).

-
6. When waltzing would you prefer to dance cheek to cheek or at arm's length? (Circle one)

(C to C) (Arm's length)

7. Does it bother you when people you don't know sit next to you on a bus?

(very much) (slightly) (not at all)

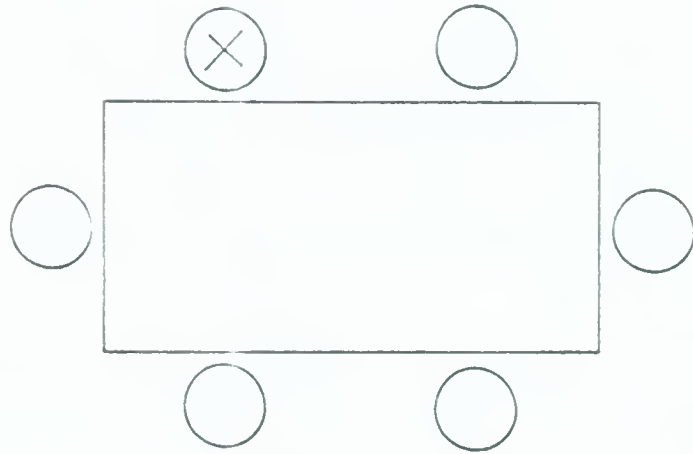
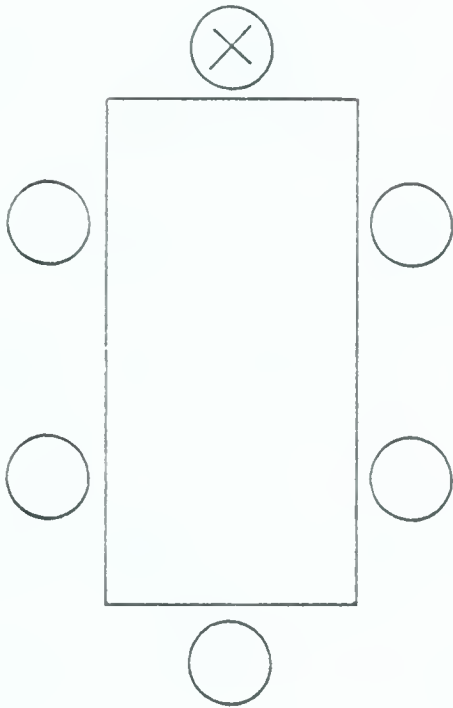
8. What term or terms best describe your feelings if another person stands too near when in conversation with you? (Circle one or more).

(Don't mind)
(Uncomfortable)
(Self-conscious)
(Irritated)
(Strained)

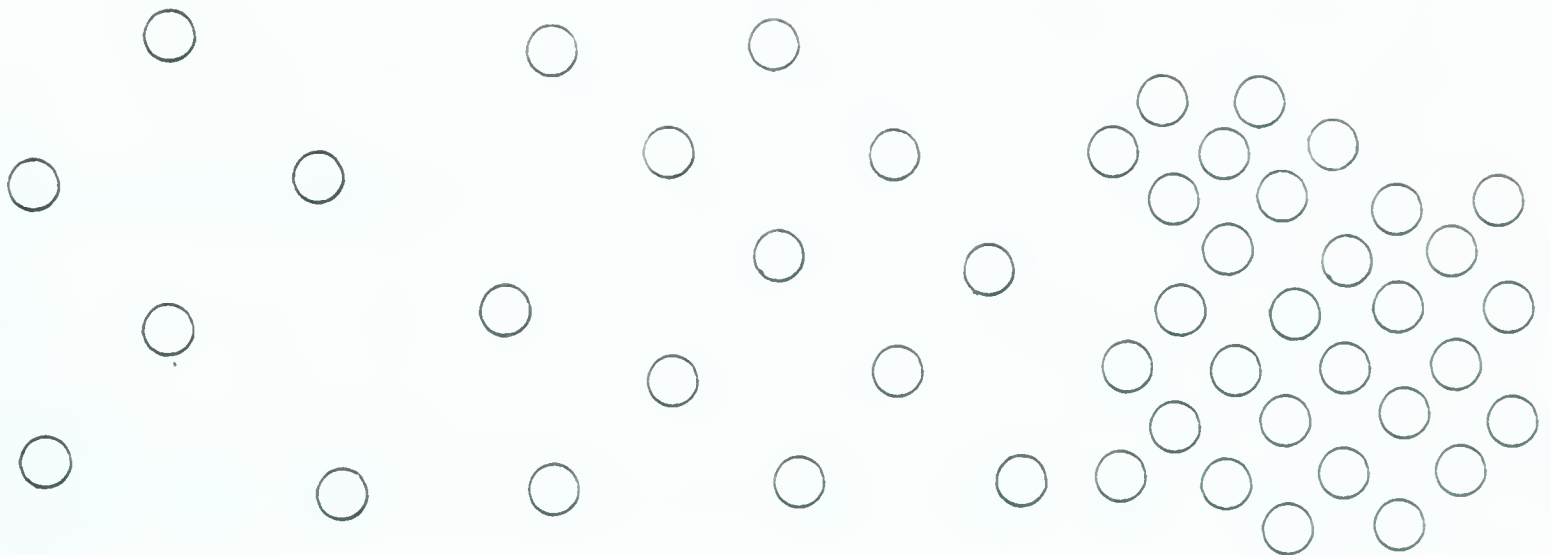
9. What term or terms best describe your feelings if another person remains too distant when in conversation with you? (Circle one or more).

(Don't mind)
(Uncomfortable)
(Self-conscious)
(Irritated)
(Strained)

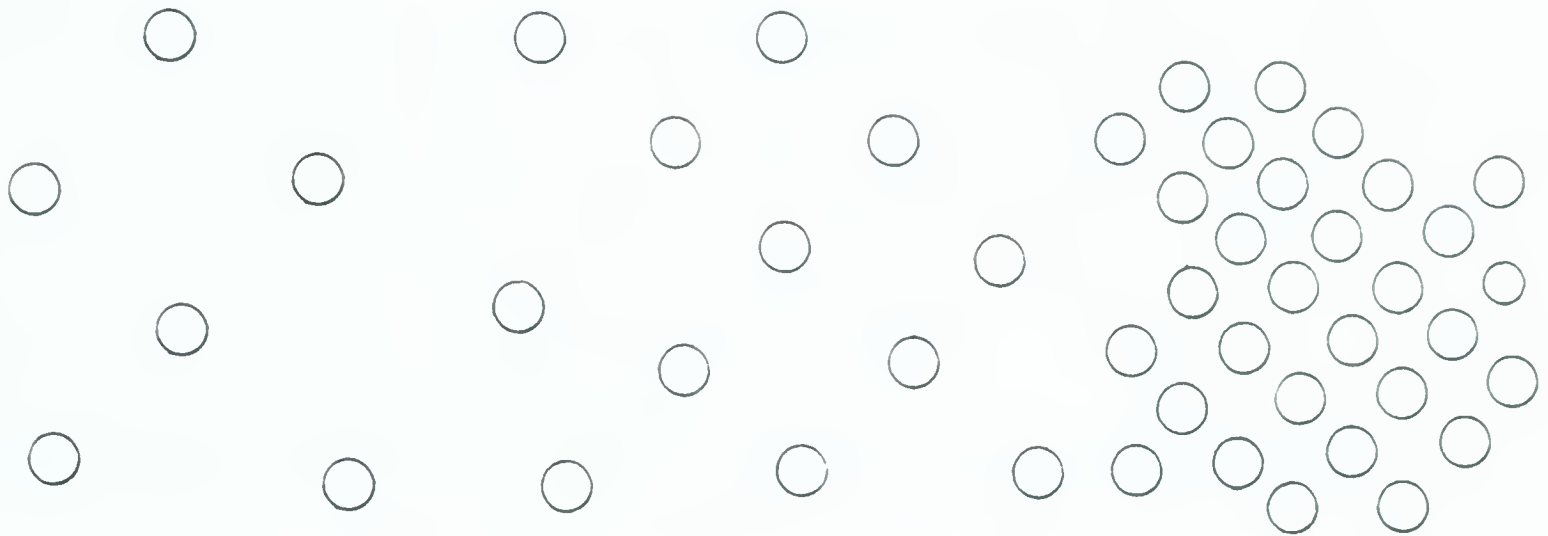
10. Here are two more table situations where another person is already seated at X. In each case put another X where you would generally sit.



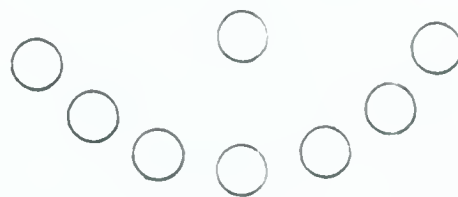
11. Here is a party situation in which all of the people are quite well-known to you. Put an X where you would most likely be.



12. Here is a beach situation in which all the people are strangers to you. Put an X where you would most likely sun-bathe.



13. Below is a group of people telling jokes. Which is you?



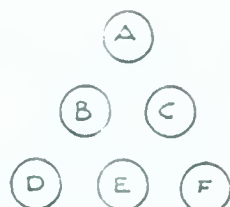
14. In a classroom, where do you generally sit? (Circle one)

(Close to the front)
(About the middle)
(Towards the back)

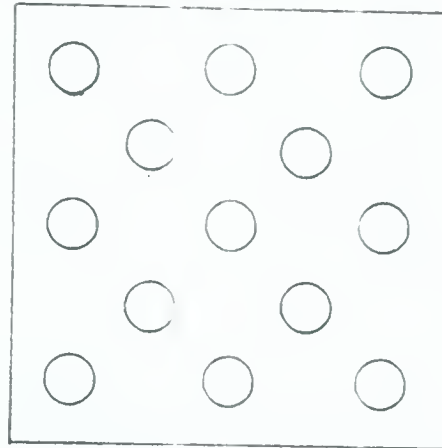
15. At the Jubilee Auditorium where would you prefer to sit if money was no problem?

(Towards the front)
(About the middle)
(Towards the back)

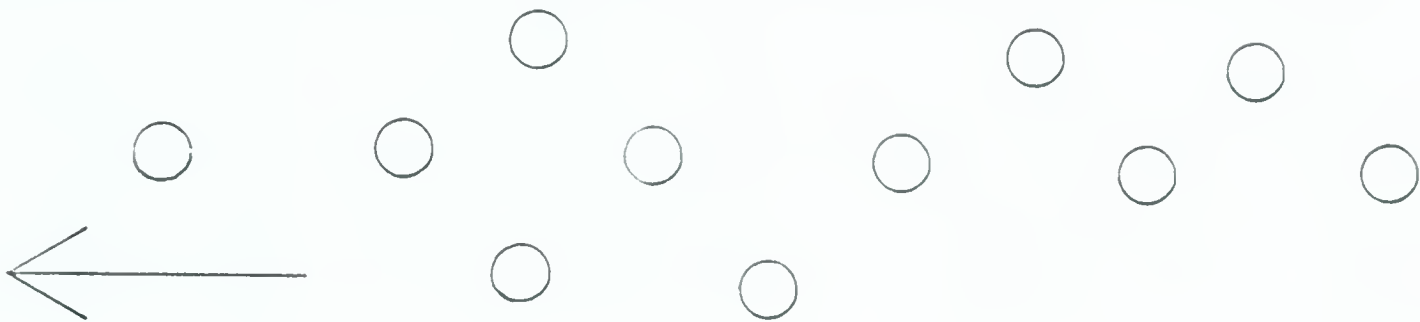
16. Here is a pyramid tumbling act. A is on top of B and C, who are in turn on top of D, E, and F. Which is you? Indicate with an X.



17. The following diagram represents tables in a restaurant. Put an X on the table you would like.



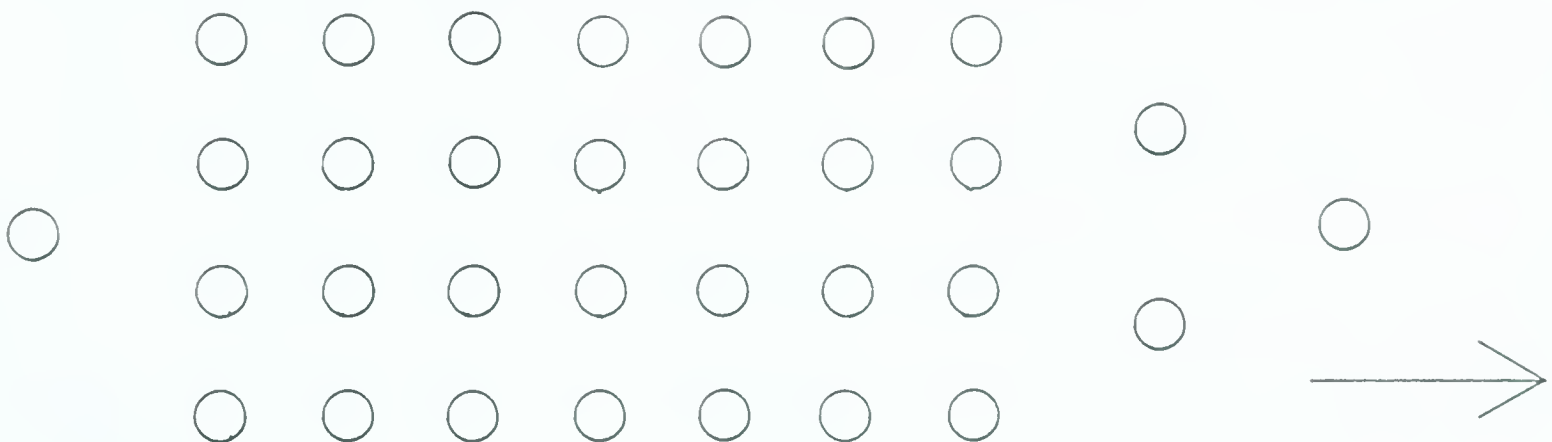
18. A motor cycle club is going on an excursion. Put an X on you.



19. Would you rather be on the stage or part of the audience? (Circle one)

(On stage) (In the audience)

20. The following represents a marching troop. Put an X on you.



21. In hockey which position would you most like to play?

(Goal) (Defence) (Forward)

22. Three close buddies are walking down the street. Put an X on you.

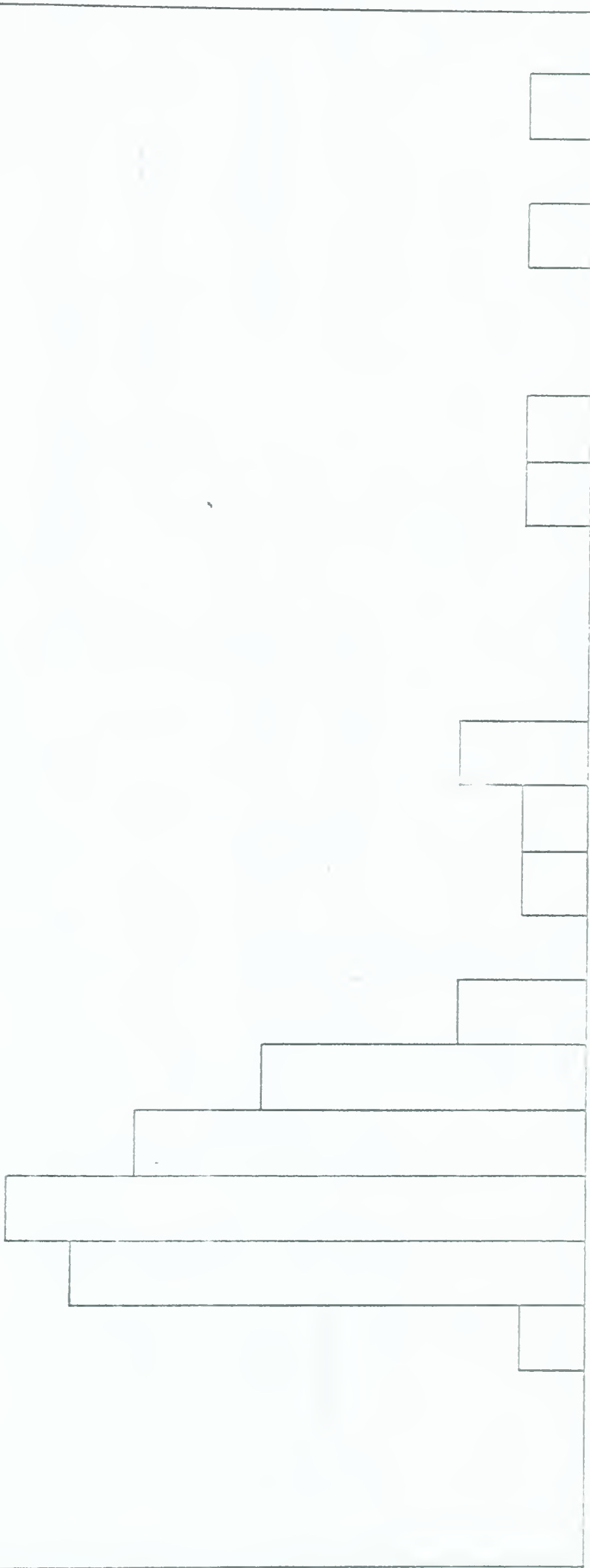


APPENDIX

Distribution of Raw Data of Phase One

Subjects

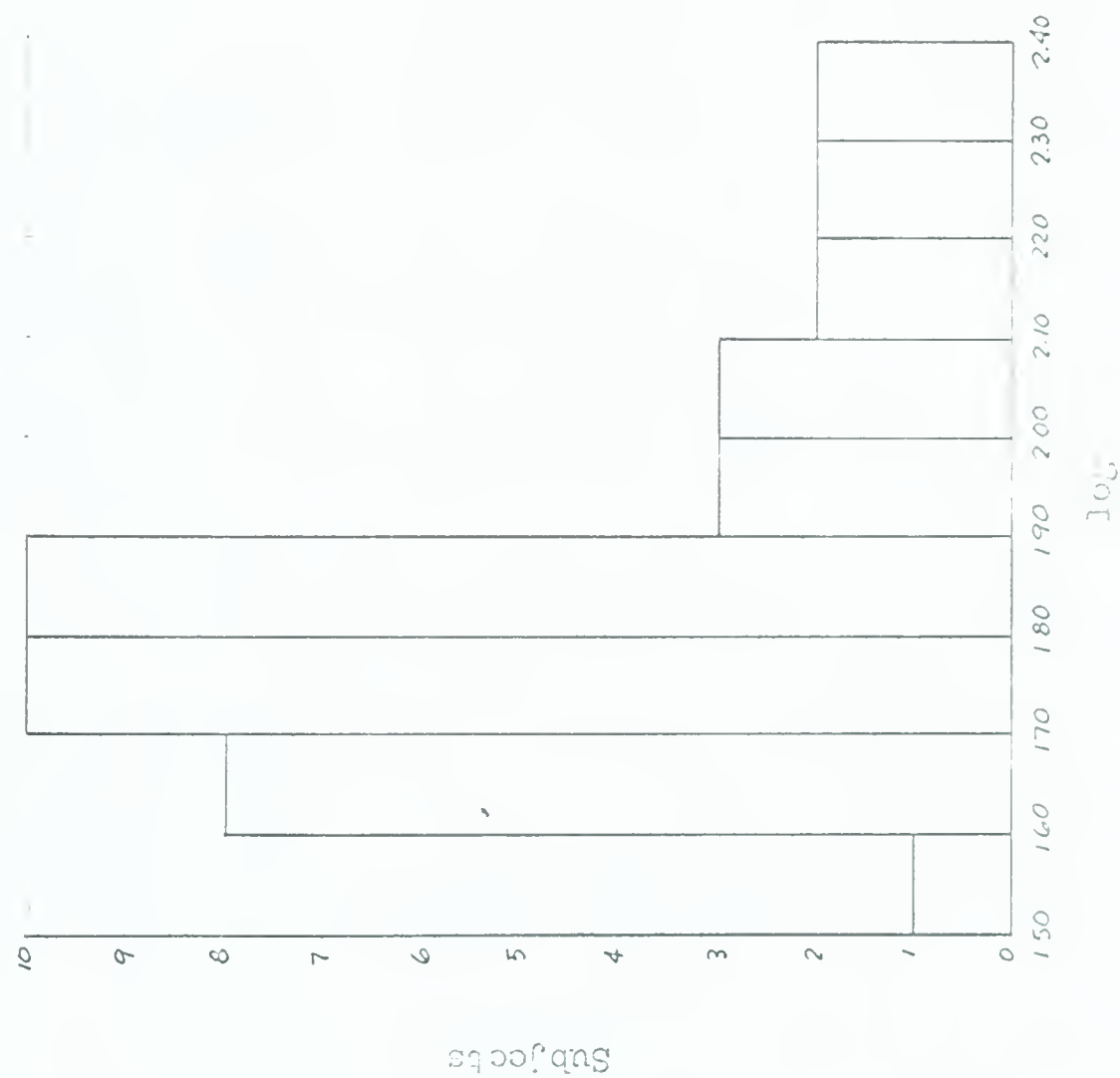
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1



Anchor

APPENDIX I

Distribution of Transformed Data of Phase One



B29819